



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/730,029  | 12/09/2003  | Zhen Fang Fu         | 033304-021          | 3231             |
| 23639 7590 06/23/2008<br>BINGHAM MCCUTCHEEN LLP<br>Three Embarcadero Center<br>San Francisco, CA 94111-4067 |             |                      |                     |                  |
| EXAMINER  |             |                      |                     |                  |
| MOSHER, MARY  |             |                      |                     |                  |
| ART UNIT  |             | PAPER NUMBER         |                     |                  |
| 1648  |             |                      |                     |                  |
| MAIL DATE   |             | DELIVERY MODE        |                     |                  |
| 06/23/2008  |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Notice of Allowability

## Application No.

10/730,029

## Examiner

Mary E. Mosher, Ph.D.

## Applicant(s)

FU, ZHEN FANG

## Art Unit

1648

### - The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 5/15/08.
2. ☒ The allowed claim(s) is/are 1,63-70 and 75.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_.

### **EXAMINER'S AMENDMENT**

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Sharon Crane on 6/17/2008.

The application has been amended as follows: The claims have been amended as shown in the attached listing of all claims.

An additional examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The abstract has been replaced with the attached abstract, to reduce the word count below 150 words.

### **REASONS FOR ALLOWANCE**

The following is an examiner's statement of reasons for allowance:

The terminal disclaimer filed on 5/15/2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US 6706523 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Rejected claim 74 has been cancelled, and claim 75 has been amended to depend from allowed claim 1. The text of cancelled claims 76-77 has been removed from the attached listing of all claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary E. Mosher, Ph.D. whose telephone number is 571-272-0906. The examiner can normally be reached on varying dates and times; please leave a message.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campbell can be reached on 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1648

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mary E Mosher, Ph.D./  
Primary Examiner, Art Unit 1648

6/18/08

AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions and listing of claims in the application:

LISTING OF CLAIMS:

1. (Previously Presented) A mutant rabies virus comprising a rabies virus N protein, wherein said N protein is not phosphorylated, wherein said mutant rabies virus is produced by a process comprising introducing a mutation in the nucleic acid of an infectious clone at a position encoding amino acid 389 of said N protein.

2-62. (Canceled).

63. (Previously Presented) The mutant rabies virus of claim 1, wherein the mutation results in the amino acid at position 389 being a neutral amino acid.

64. (Previously Presented) The mutant rabies virus of claim 63, wherein the mutation results in the amino acid at position 389 being alanine, glycine, glutamine, glutamic acid, aspartic acid or asparagine.

65. (Previously Presented) The mutant rabies virus of claim 64, wherein the mutations results in the amino acid at position 389 being alanine.

66. (Previously Presented) The mutant rabies virus of claim 1, wherein said mutant rabies virus N protein is encoded by SEQ ID NO:62, SEQ ID NO:63 or SEQ ID NO:64.

Art Unit: 1648

67. (Previously Presented) The mutant rabies virus of claim 66, wherein said mutant rabies virus N protein is encoded by SEQ ID NO:62.

68. (Previously Presented) The mutant rabies virus of claim 1, further comprising a mutant G glycoprotein.

69. (Previously Presented) The mutant rabies virus of claim 68, wherein said G glycoprotein comprises an amino acid other than arginine at position 333.

70. (Previously Presented) The mutant rabies virus of claim 69, wherein said G glycoprotein comprises a Glu at position 333.

71-74. (Canceled.)

75. (Currently amended) A method for producing a mutant rabies virus, comprising growing ~~said mutant rabies virus in the host cell of claim 74; the mutant rabies virus of claim 1 in a mammalian host cell which produces wild-type rabies virus N protein.~~

76-77. (Canceled.)

**Abstract of the disclosure**

A mutant virus contains a mutation at a phosphorylation site in one or more viral proteins, which attenuates the virus, and an improved vaccine composition. The invention also relates to methods of inducing an immune response, and protecting mammals from infection by rabies virus. Also included are methods of producing the mutant virus and mutant viral proteins, including producing the mutant virus in a host cell which produces or-overproduces a wild-type counterpart of the mutant viral protein, which complements the other viral proteins such that production of the mutant viral particle is optimized. The invention also includes those host cells, vaccine compositions including the viral proteins, -alone or in combination with-intact virus, and methods of inducing an immune response or protecting a mammal from infection. Also included are vectors suitable for delivering a gene to a cell of a human or animal, and methods of delivery thereof.